



# WASHOE COUNTY

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CM/ACM \_\_\_\_\_  
Finance DN  
DA \_\_\_\_\_  
Risk Mgt. DE  
HR N/A  
Other N/A

## STAFF REPORT

BOARD MEETING DATE: June 23, 2015

**DATE:** June 1, 2015  
**TO:** Board of County Commissioners  
**FROM:** Gary Beekman, IT Manager, Regional Services,  
Washoe County Technology Services Department,  
775-328-3619, [gbeekman@washoecounty.us](mailto:gbeekman@washoecounty.us)

**THROUGH:** The 800 MHz Joint Operating Committee

**SUBJECT:** Recommendation to approve the sole source purchase of a P25 phase 2 simulcast radio system solution as recommended by the 800 MHz Joint Operating Committee on June 19, 2015 from Harris Corporation to address the radio system coverage problems in the Red Rock/Rancho Haven area as well as continue the transition to a new digital radio system in an amount not to exceed [\$850,000]. (All Commission Districts)

### SUMMARY

The Washoe County Regional Communications System was established and has been operated in accordance with the terms and provisions of the original Interlocal Agreement dated October, 1999 and the amendments on July 1, 2002, and October 2014. The Interlocal agreements are between the County of Washoe, the Washoe County School District, the Nevada Department of Transportation, the City of Reno, the City of Sparks and the Truckee Meadows Fire Protection District. These agreements provide for the continued development and operation of the Washoe County Regional Communications System (WCRCS). The participating agencies have operated and do now operate a trunked radio communication system for public safety and other services in the County of Washoe. The current analog radio system is scheduled to reach end of life in 2017. This purchase will address radio system coverage problems in the Red Rock/Rancho region as well as allow for the continuation of the transition from an analog to a digital communication system.

**Washoe County Strategic Objective supported by this item:** Safe, Secure and Healthy Communities.

AGENDA ITEM # 20

## **PREVIOUS ACTION**

October, 1999 Washoe County, the Washoe County School District, the Nevada Department of Transportation, the City of Reno, the City of Sparks and the Truckee Meadows Fire Protection District entered into an agreement to establish the Washoe County Regional Communication System (WCRCS).

July 1, 2002 an Amendment to the Washoe County Regional 800 MHZ Communications System October 1999 Interlocal agreement was approved by the Board of County Commissioners to include updates to sponsoring a private provider such as the application process, review and recommendation, final action and governing law and venue.

April 22, 2014 approved an Interlocal Agreement between the Nevada Department of Transportation (NDOT) and Washoe County to share the cost of the Hardware Refresh of the Washoe County Regional Communications System (WCRCS) Voice Interoperability Data Access (VIDA) communications system switches, in an amount not to exceed [\$500,000].

October 14, 2014 an amendment to the Interlocal Agreement between Washoe County, the Washoe County School District, the Nevada Department of Transportation, the City of Reno, the City of Sparks and the Truckee Meadows Fire Protection District to provide for the continued development and operation of the Washoe County Regional Communications System (WCRCS).

June 19, 2015 A special meeting of the Joint Operating Committee was held to discuss the possible purchase of a P25 phase 2 simulcast radio solution. The special meeting was called due to a \$75,000 end of fiscal year discount valid until June 30, 2015 offered for the simulcast system from Harris Corporation. The committee recommended the BCC approve the sole source purchase of a P25 phase 2 simulcast radio system solution from Harris Corporation to address the radio system coverage problems in the Red Rock/Rancho Haven area as well as continue the transition to a new digital radio system in an amount not to exceed [\$850,000].

## **BACKGROUND**

The Washoe County Regional Communications System was established and has been operated in accordance with the terms and provisions of the original Interlocal Agreement dated October, 1999 and the amendments on July 1, 2002, and October 2014. The Interlocal agreements are between the County of Washoe, the Washoe County School District, the Nevada Department of Transportation, the City of Reno, the City of Sparks and the Truckee Meadows Fire Protection District. The agreement establishes a Joint Operating Committee and a User's Committee to provide a structure that enables administrative and fiscal review of the operating and maintenance of the WCRCS by the participating agencies.

The original goal of the Washoe County Regional Communications System (WCRCS) was to replace the participating non-public safety and public safety agencies' existing radio communication systems throughout Washoe County with a modern, trunked radio system. A goal of the WCRCS is to provide effective and reliable radio communications for routine intra-agency operations as well as inter-agency communications throughout

the region during mutual aid and disaster operations. The current radio system is reaching end of life. WCRCS, NDOT, and Nevada Energy have started working on a plan to migrate to a new P25 phase 2 radio system. The migration to the new system will be a phased in approach which will transpire over a five to seven year period. This purchase will not only address radio coverage problems in the Red Rock / Rancho Haven area but will also give us a platform for testing and integrating the new digital P25 phase 2 radio system.

This purchase will be a sole source purchase from Harris Corporation, 5331 Green Valley Road, Placerville, California 95667.

Pursuant to NRS 332.115 1. (q) the design of, and equipment and services associated with, systems of communication are exempt from competitive bidding requirements.

### **FISCAL IMPACT**

Expenditure will not exceed [\$850,000] within the Fiscal Year 2014-2015 adopted budgets for Washoe County Regional Communication System. Sufficient funds are available in C210010 RCS Operations, C210200 RCS Expansion, and C210300 RCS Infrastructure.

Washoe County Regional Communication continues to aggressively investigate and negotiate all price quotes, and wherever possible, attempts to achieve the best pricing and/or alternative options to ensure reliable infrastructure at the least possible cost

No Washoe County General Fund budget will be used to support these costs.

### **RECOMMENDATION**

It is recommended that the Board of County Commissioners move to approve the sole source purchase of a P25 phase 2 simulcast radio system solution as recommended by the 800 MHz Joint Operating Committee on June 19, 2015 from Harris Corporation to address the radio system coverage problems in the Red Rock/Rancho Haven area as well as continue the transition to a new digital radio system in an amount not to exceed [\$850,000].

### **POSSIBLE MOTION**

Should the Board agree with staff's recommendation, a possible motion would be: "Move to approve the sole source purchase of a P25 phase 2 simulcast radio system solution as recommended by the 800 MHz Joint Operating Committee on June 19, 2015 from Harris Corporation to address the radio system coverage problems in the Red Rock/Rancho Haven area as well as continue the transition to a new digital radio system in an amount not to exceed [\$850,000]".

**WASHOE COUNTY  
SOLE SOURCE PURCHASE REQUEST FORM**

**This form must accompany a purchase requisition when sole source approval is requested for equipment, supplies or services exceeding \$25,000.**

DEPARTMENT Technology Services LOCATION 230 Edison Way

REQUESTOR'S NAME Gary Beekman TELEPHONE # (775)328-2348

REQUISITION NUMBER \_\_\_\_\_ DATE 06/02/2015

RECOMMENDED SOLE SOURCE SUPPLIER Harris Corporation

DESCRIPTION OF GOOD OR SERVICE REQUESTED: Purchase a new 800 MHz P25 Phase 2, Simulcast Radio system for the Washoe County Regional Communication System through a sole source vendor up to an amount of \$850,000.

I have read and understand the Policies and Procedures of the Board of County Commissioners with regard to sole source procurements. I understand that competition is the preeminent consideration in the expenditure of County funds, and I acknowledge the County's commitment to the principle of fairness to any vendor who would like to do business with the County. After observing these principles and considerations, I hereby submit that the goods, services, and/or vendor specified in the accompanying requisition fit the County's sole source criteria for the following reasons: Please provide sufficient detail to clearly identify the reason(s) for this sole source procurement request. Attach additional information if necessary.

(X) 1. The product is unique in design and/or features that are required for a specific application. List the unique features and explain why they are needed for the application the product will be used for.

This equipment maintains full system compatibility with our existing communications infrastructure to leverage and support further enhancement in the future.

(X) 2. The product being purchased must be compatible with existing equipment. Identify the existing equipment.

The Equipment must be able to fully integrate into the existing Washoe County Regional Communications System 800 MHz Infrastructure.

(X) 3. The product requested is one which the user has had specialized training for. Identify who the user of this product will be and provide a description of the previous training.

Washoe County Regional Communications System Maintenance Personnel have received specialized factory training on the operation and maintenance of this equipment.

(X) 4. The product or service is available only from the manufacturer or their authorized representative. Identify the manufacturer or authorized representative, and provide telephone number and address information.

Representative:  
Harris Corporation  
Elias F. Ruonavaara  
5331 Green Valley Road  
PlacerVille, CA 95667  
(530)306-7271

( ) 5. Consultants/Subcontractors: The individual/company is the most suitable to provide the service requested and the selection process is based on the following:

( ) There is evidence that the assistance to be provided is essential and cannot be provided by persons receiving salary support within Washoe County.

- ( ) A selection process was utilized to select the most qualified person.
- ( ) The consulting charges are appropriate considering the qualifications of the consultant or company based on past experience and the nature of the work to be performed.

( X ) 6. Other. Please explain the specific circumstances and/or requirements that warrant the goods or services request to be procured from a sole source.

The systems and components provided are specially designed and manufactured to fully integrate into the Regional Communications System.

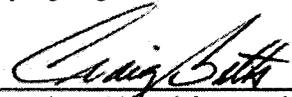
( x ) 7. The following provides justification as to reasonableness of price:

This Vendor is the system designer and manufacturer. Lowest possible price is always a factor in this process. We always receive a discount meeting or exceeding that provided through the WSCA contract. Harris will be giving us a discount of \$75,000 on this purchase if it is made in the fiscal year 2014/2015.

We request approval of Harris Corporation as a sole source based on the NRS exemption NRS 332.115q

I understand that I may be required to justify this sole source procurement before the appropriate authority, including the Board of County Commissioners, and that my signing this document knowing any of it to be false may subject me to administrative action.

  
 \_\_\_\_\_  
 Signature of Requestor

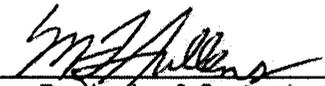
  
 \_\_\_\_\_  
 Department Head Approval

**CRAIG BETTS**  
 \_\_\_\_\_  
 Print Name

I, \_\_\_\_\_, authorized Buyer, recommend the following:

- Sole source justification is adequate and exempt from competitive bidding requirements per NRS 332.115.
- ( ) Sole source justification is adequate to justify exemption from competitive bidding requirements per NRS 332.\_\_\_\_.
- ( ) Sole source justification is inadequate and request is returned to department for additional justification, instructions on whether to seek competitive bids for the goods or services requested, or to withdraw the request.

\_\_\_\_\_  
 Buyer

  
 \_\_\_\_\_  
 Purchasing & Contracts  
 Administrator

\_\_\_\_\_  
 Date

**6/2/2015**  
 \_\_\_\_\_  
 Date

**Radio Coverage Solution for the Red Rock Area:** Rough Order of Magnitude cost matrix showing possible solutions to address the Radio System coverage problems in the Red Rock/Rancho Haven area.

**Option 1:** A Simulcast System that mirrors or existing Metro System.

Pro: Multiple issues addressed, In addition to providing a donor site to support a Vehicular Repeater unit(s) in the Red Rock/Ranch Haven area, it will facilitate testing and performance comparisons by staff and system users of how P25 would and could support their needs in a fashion that would closely mimic our current Metro EDACS Simulcast system. Allows the purchase and deployment of a less expensive portable radio unit for non-critical/non-public safety users onto the system for agencies not requiring coverage outside the Reno/Sparks area.

Con: Higher Cost than a Multi-Site installation.

Simulcast (Peavine and Red Peak), 4ch \$780,000, +10% contingency \$858,000.

Simulcast (Peavine and Red Peak), 3ch \$690,000, +10% contingency \$759,000.

Simulcast (Peavine and Red Peak), 2ch \$600,000, +10% contingency \$660,000.

**Option 2:** A standalone multi-site.

Pro: Provides a donor site to support the temporary Vehicular Repeater in the Red Rock/Ranch Haven area. Allows the purchase and deployment of a less expensive portable radio unit for non-critical/non-public safety users onto the system for agencies not requiring coverage outside the Reno/Sparks area.

Con: Will not accurately depict P25 equivalency with our Metro Simulcast System. It will support new lesser expensive P25 only radio models, however the performance will be noticeably lower.

Single site Rough Order of Magnitude Quote 3ch \$225,000, +10% contingency \$247,500

Single site Rough Order of Magnitude Quote 2ch \$145,000, +10% contingency \$159,500

**Option 3:** Full Communications Site Installation (Probably BLM Land on the North side of the Valley).

This would be a full site with either Commercial or Solar Power, requiring battery backup, generator, pre-fabricated communications shelter, monopole or lattice self-supporting tower, VHF and 700/800MHz antennas and communications equipment.

Pro: This is the full and proper solution that will need to be done eventually. Does not require the installation of a P25 System at Peavine.

Con: Conceivably the highest cost option and perhaps 2 years to complete. Will require all units, mobile and portable to be P25 enabled to function and also users must manually switch to this system when they enter the area.

Rough Cost, \$800,000 with 10% contingency \$880,000. This does not include the cost to build a new commercial power line to the site, very location sensitive, with Solar Power, \$925,000 with 10% contingency \$1,017,500.

**Options 1 and 2 also require this item:**

P25 Vehicular repeater, \$10,000 per vehicle or a single cost \$12,000 installed at the Fire Station, not a recommended application but would suffice as a temporary solution. Harris makes a product called a P25 Vehicular Repeater that allows local units to repeat through it to a P25 System. It gives the local radios the ability to talk on up to 64 talk groups, one at a time, with Dispatch or units on the main system, P25 or EDACS with our current configuration.

\*These solutions all rely on our existing Harris VIDA/EDACS infrastructure, which can support any of these configurations. If we choose to go with a different vendor for our P25 system, these items will not be compatible and would need to be replaced. This holds true for our entire existing infrastructure and field radios, they would all require replacement when/if we transition to the new vendor.



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Rough Order Magnitude  
(ROM) Quotation for  
Washoe County/Nevada  
Shared Radio System

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## Overview

Harris Corporation is pleased to provide a Rough Order Magnitude (ROM) quote to Washoe County that outlines the addition of a new 800 MHz P25 Phase 2, 2-Site Simulcast System into the existing SR10A switch system. This ROM provides Washoe County with budgeting information to assist in procuring a Public Safety network for various users in Washoe County.

The Harris VIDA P25<sup>IP</sup> system solution combines the power of Internet Protocol (IP) with the standard features of a P25 trunked simulcast system. The P25<sup>IP</sup> system is based on the latest Harris technology and products. The P25<sup>IP</sup> system is a fully integrated voice and data network designed around an IP based infrastructure.

This quote includes a 2-site, 2-channel, P25 Phase 2 simulcast system with optional expansion to channels 3 and 4, and the associated licenses to connect to the existing SR10A switch system in Washoe County. This quote is provided at the WSCA discount level, with services included. Harris looks forward to working collaboratively with Washoe County to determine further details for a more accurate quote.

This ROM consists of the following:

- P25 Phase 2, 2-channel, 2-site simulcast system, staging, and services
- Expansion to channels 3 and 4 quoted as an option

## P25 Phase 2 Simulcast System

The two simulcast sites are currently EDACS sites located at Peavine and Red Peak in Washoe County. Washoe County provided the antenna heights from which to run preliminary P25 simulcast maps. The new equipment listed below represents the high-level components required at each simulcast site and at the switch location.

### Radio Site - Peavine

- P25 IP Simulcast Distributed Control Point
- Network Management Subsystem including Administration
- One (1) DC powered 800 MHz P25 trunked RF site with two (2) channels and a new antenna system

### Radio Site – Red Peak

- Network Management Subsystem including Administration
- One (1) DC powered 800 MHz P25 trunked RF site with two (2) channels and a new antenna system

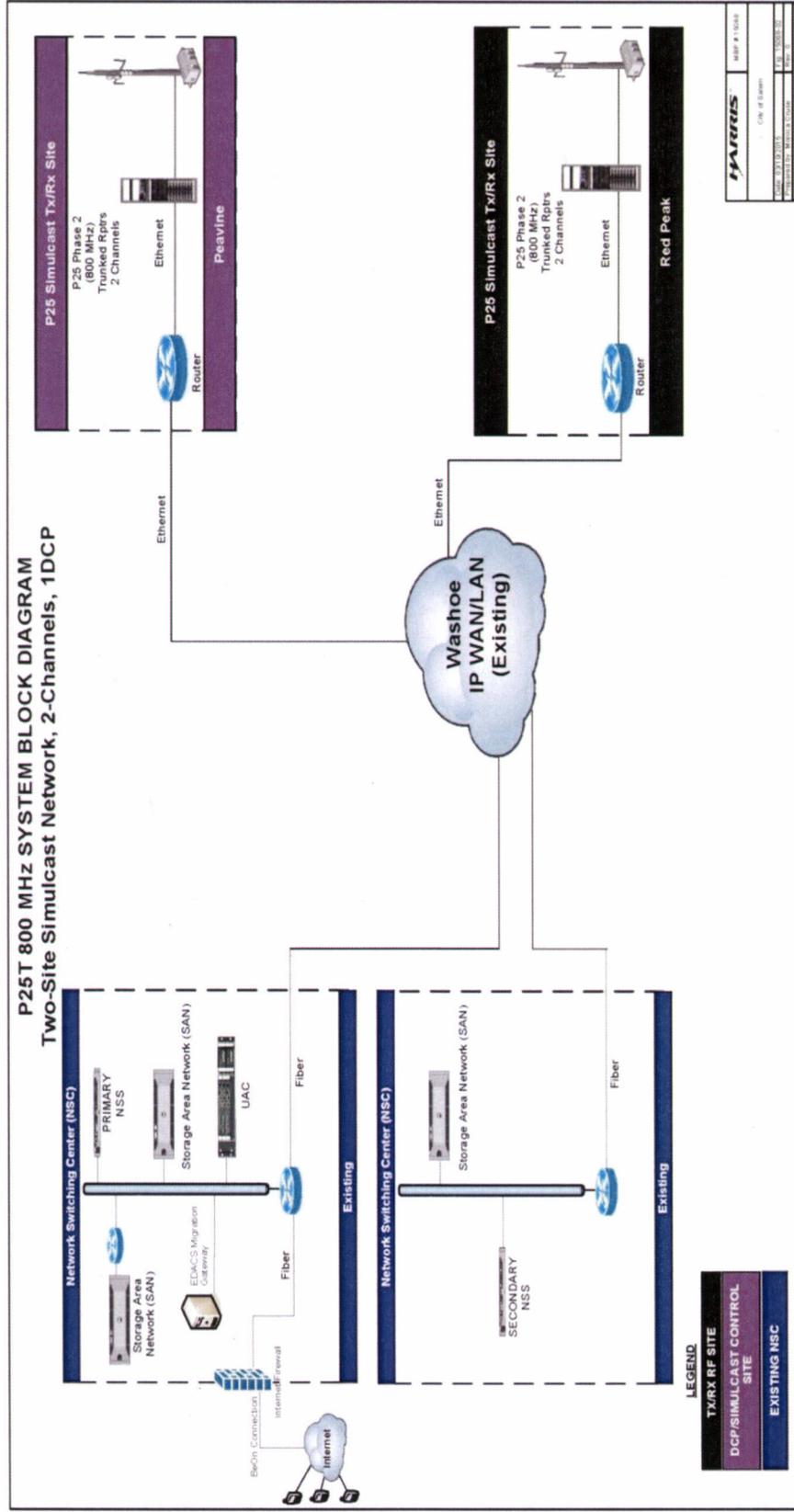
### Switch Licenses

- P25 Application

- SUMS Endpoint
- Host Security
- P25 Site Talkpath
- P25 Site Interface

Figure 1 provides an overview of the system configuration.

Figure 1: Proposed System Design



## Antenna Systems

The antenna system consists of: antennas, transmission line, jumper cables, tower top amplifier (TTA), receiver multicoupler and transmitter combiner. Harris is quoting the TTA, receiver multicoupler, and transmitter combiner (4-CH). Washoe County will be responsible for purchasing and installing the antennas, transmission line, and other related antenna system equipment required but not mentioned above. Harris recommends DIN connectors for all antenna lines.

The omnidirectional antennas used for transmit and receive coverage are as follows:

**Figure 2: Antennas**

Site	Transmit Antenna	Receive Antenna
Peavine	Model: <b>DS7C09F36U-N</b> Vendor: <b>dbSpectra, Inc</b> Ht: <b>85 ft</b> Transmission Line: <b>7/8 inch</b>	Model: <b>DS7C10F36U-N</b> Vendor: <b>dbSpectra</b> Ht: <b>100 ft</b> Transmission Line: <b>7/8 inch</b>
Red Peak	Model: <b>DS7C09F36U-N</b> Vendor: <b>dbSpectra</b> Ht: <b>45 ft</b> Transmission Line: <b>7/8 inch</b>	Model: <b>DS7C10F36U-N</b> Vendor: <b>dbSpectra</b> Ht: <b>150 ft</b> Transmission Line: <b>7/8 inch</b>

## Frequency Coordination

Washoe County will provide the frequencies necessary for the trunked simulcast system. Two, 800 MHz channels are required initially. If the system is expanded to four channels, two additional 800 MHz channels will be required. Washoe County will be responsible for all frequency coordination under the terms of this ROM proposal.

## Backhaul

Washoe County has indicated that Ethernet backhaul connectivity exists to each of the simulcast sites. For the 2-site simulcast system, including one Distributed Control Point site, the link budget is 1.544 Mbps or a T1 capacity between each site and from the DCP site to the NSC site. 10Mbps is required between each Network Switching Center. Washoe County will provide connectivity into the simulcast system's DCP site via an existing MPLS router located at the primary switch location.

## Coverage Analysis

Harris used its RAPTR coverage prediction program to predict preliminary coverage for the 2 site P25 Phase 2 simulcast system.

Sample preliminary maps depicting portable talkout coverage indoors and outdoors are shown in **Error! Reference source not found.** and 0. "Talk-out" represents the path from Base Station to User Equipment. Coverage modeling was performed at 95% reliability using a portable 0 dB gain antenna.

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This preliminary design is talkout limited due to ERP restrictions of 200W (based on EDACS license information). A balanced talk-in and talkout system is possible but requires an increase in ERP.

Detailed portable coverage maps as listed below are enclosed. Coverage maps included in this ROM do not represent a guarantee of coverage.

- Portable Talk-out Outdoor
- Portable Talk-out Indoor – 10dB

Figure 3: P25 Phase 2 Portable Talk-out Outdoor

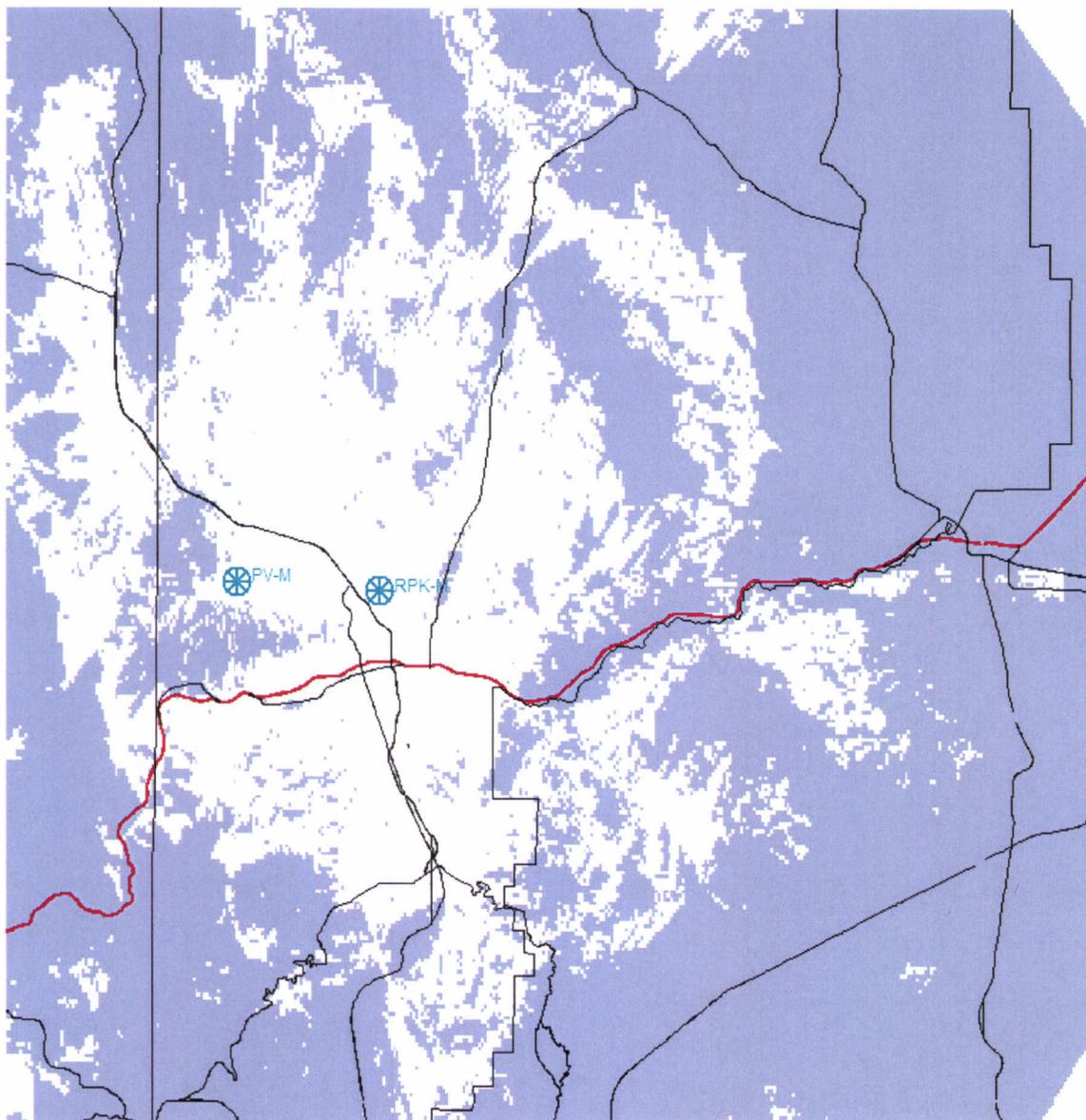
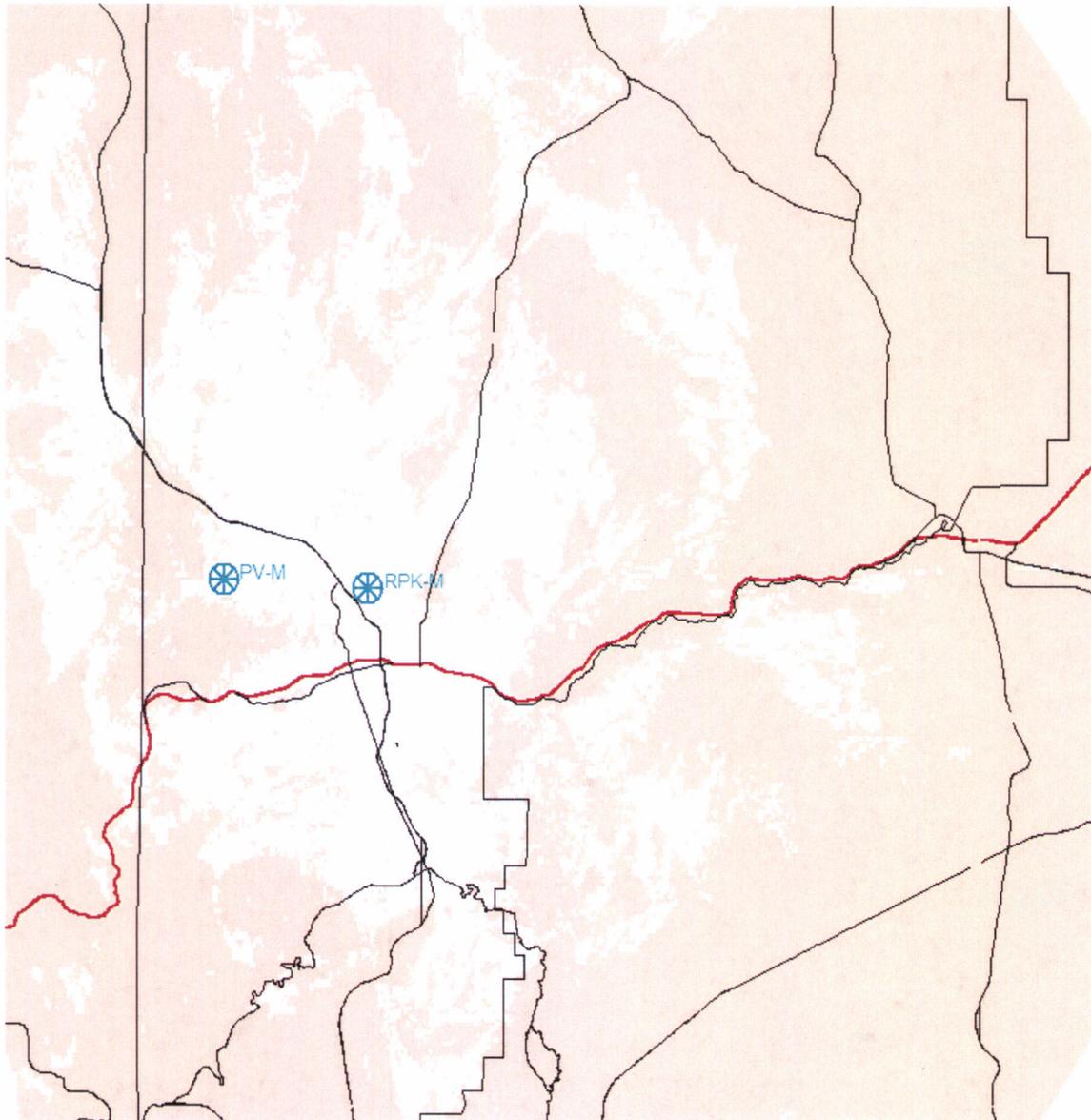


Figure 4: P25 Phase 2 Portable Talk-out Indoor



## Services

Harris is proposing various services to ensure the P25 Phase 2 simulcast system is managed successfully from procurement to optimization to acceptance. The Harris service package includes project management, staging, engineering, and installation/field services. These services are included because of the complex nature of a simulcast system and the integration into existing High Availability switches. Below are high-level descriptions of Harris' service roles and responsibilities.

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The project manager will be responsible for successful implementation, integration, optimization, and acceptance of this project. The project manager will manage all phases of the project from the beginning through acceptance and will be the primary point of contact and official liaison between Harris and Washoe County.

Staging involves assembling the simulcast equipment in racks followed by testing. Staging will take place in two phases. Initial phase of staging will occur in Lynchburg, VA where the equipment will be racked, software installed, and intra-rack connections made for each site's equipment. The second phase includes staging at the Las Vegas facility. Here the system engineer will set the IP addresses and verify operation of the network and radio system.

The system engineer will have technical responsibility for the design and technical implementation of the simulcast system. The system engineer will oversee the system acceptance test and will direct the system optimization process and other tests to ensure that all system parameters are correct and fully meet the technical and contractual requirements.

Field Services will have responsibility for the successful installation and assist with the implementation of the simulcast system. Installation includes installing the equipment racks and connecting all inter-system cables.

## Pricing Summary

Harris is pleased to provide Washoe County with the following budgetary estimate. Please note this pricing is not executable and should be used for budgetary purposes only. Should Washoe County determine they would like to procure any or all of the components proposed, Harris would be pleased to provide a Firm Fixed Price quotation.

**Figure 5: Pricing Summary Channels 1 and 2**

System Component	Price
Licenses for Existing HA Switch <i>(P25 Application, SUMS, Host Security, P25 Site, P25 Talkpath)</i>	\$ 35,896
Peavine Site: 2-CH Simulcast Transmit Site with Distributed Control Point	\$ 203,923
Peavine Antenna System: Transmitter Combiner (4-CH), Receiver Multicoupler, Tower Top Amplifier	\$ 25,249
Red Peak Site: 2-CH Simulcast Transmit Site	\$ 112,575
Red Peak Antenna System: Transmitter Combiner (4-CH), Receiver Multicoupler, Tower Top Amplifier	\$ 25,249
<b>Equipment/License Total</b>	<b>\$ 402,892</b>
<b>Services</b>	
Project Management Staging System Engineering Installation	\$ 195,384
<b>TOTAL</b>	<b>\$ 598,276</b>

**Figure 6: Optional Pricing Summary Channels 3 and 4**

System Component	Price
Peavine Site: Channel 3	\$ 21,609
Red Peak Site: Channel 3	\$ 21,609
<b>Subtotal</b>	<b>\$ 43,218</b>
Peavine Site: Channel 4	\$ 18,968
Red Peak Site: Channel 4	\$ 18,968
<b>Subtotal</b>	<b>\$ 37,936</b>

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System Component	Price
<b>TOTAL*</b>	<b>\$ 81,154</b>

*\*Services are not included with the installation of channels 3 and 4*

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## Assumptions

The pricing provided is based on the following assumptions.

- This quote is Rough Order Magnitude at a WSCA discount level.
- Standard features have been configured for the components that make up the system.
- No backhaul connectivity has been provided in this quote. Harris assumes the existing backhaul connectivity has the capacity to support the proposed equipment.
- No backup power equipment has been provided in this quote.
- This system is configured for P25 Phase 2 TDMA operation.
- It is assumed that Washoe County has 800 MHz frequencies that can be effectively used in a trunked simulcast environment. It is further assumed the channels are without interference.
- It is assumed that adequate spacing between frequencies is provided. 250 kHz is recommended, but the proposed combiner can support as low as 150 kHz separation.
- Harris will provide Washoe County with the information to complete FCC Licensing forms, however as the Licensee, Washoe County is responsible for completing and submitting the necessary FCC forms to re-license the frequencies.
- Harris has not included any optional features in this quotation, such as: extended warranty, telephone or on-site technical support, software FX or hardware FX.
- No hazardous material will be found at the sites.
- Sites are not close to an existing AM radio station, and will not require any AM detuning work.
- Washoe County is responsible for any civils work needed to prepare the site for installation of the LMR equipment.
- Site access roads are adequate for the delivery trucks that will travel to site.
- No prevailing wages, mandatory union workers, or mandatory minority business are required for the project
- All work is priced based on normal working hours, 7:30 AM to 5:00 PM.
- At Existing Sites, Washoe County will:
  - Hang antennas and transmission lines
  - Provide shelters with adequate facilities for the new system
  - Provide adequate electrical power in the form of 40 amps of negative 48 VDC power at each site to power the 2-ch P25 MASTR V system
  - Provide adequate HVAC for the LMR equipment displacing ~ 6,200 BTUs
  - Provide adequate space for two new equipment racks at each site

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- Provide adequate protected power in the form of a standby generator
  - Provide site grounding in the form of a single point ground system. The soil at each site should allow for a constructed ground system that can achieve a ground resistance of 10-ohms or less

## Summary

Harris is a leader in providing secure, mission-critical public safety voice and data networks in the State of Nevada, throughout the United States and worldwide. We look forward to the opportunity to collaborate with Washoe County to provide the users with a resilient, high capacity P25 network solution.